

# **PGXN ARCHITECTURE**

**David E. Wheeler**  
**PGXN, Tembo**

# **PGXN Components**

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**Meta Spec — [pgxn.org/spec](https://pgxn.org/spec)**

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**Search API — [api.pgxn.org](http://api.pgxn.org)**

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**CLI — [pgxn.github.io/pgxnclient](https://pgxn.github.io/pgxnclient)**



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**CLI — [pgxn.github.io/pgxnclient](https://pgxn.github.io/pgxnclient)**

**CI/CD Tools — [github.com/pgxn/docker-pgxn-tools](https://github.com/pgxn/docker-pgxn-tools)**

**META SPEC**

# Meta Spec

[pgxn.org/spec](https://pgxn.org/spec)

# Meta Spec

[pgxn.org/spec](https://pgxn.org/spec)

**Inspired by CPAN**

# Meta Spec

[pgxn.org/spec](http://pgxn.org/spec)

Inspired by CPAN

Lives in META.json

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[pgxn.org/spec](https://pgxn.org/spec)

**Inspired by CPAN**

**Lives in META.json**

**Sole requirement to publish**

# Meta Spec

[pgxn.org/spec](https://pgxn.org/spec)

**Inspired by CPAN**

**Lives in META.json**

**Sole requirement to publish**

**All other data derived**





```
{
  "name": "pair",
  "version": "0.1.8",
  "abstract": "A key/value pair data type",
  "description": "This library contains a single PostgreSQL extension, a key/val
  "maintainer": [
    "David E. Wheeler <david@justatheory.com>"
  ],
  "license": "postgresql",
  "provides": {
    "pair": {
      "abstract": "A key/value pair data type",
      "file": "sql/pair.sql",
      "docfile": "doc/pair.md",
      "version": "0.1.2"
    }
  },
  "prereqs": {
    "runtime": {
      "requires": {
        "PostgreSQL": "9.1.0"
      }
    }
  },
}
```

```
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      "docfile": "doc/pair.md",
      "version": "0.1.2"
    }
  },
  "prereqs": {
    "runtime": {
      "requires": {
        "PostgreSQL": "9.1.0"
      }
    }
  },
}
```

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        "PostgreSQL": "9.1.0"
      }
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      "file": "sql/pair.sql",
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      "version": "0.1.2"
    }
  }
}
"prereqs": {
  "runtime": {
    "requires": {
      "PostgreSQL": "9.1.0"
    }
  }
}
```

```
  "resources": {
    "bugtracker": {
      "web": "https://github.com/theory/kv-pair/issues/"
    },
    "repository": {
      "url": "git://github.com/theory/kv-pair.git",
      "web": "https://github.com/theory/kv-pair/",
      "type": "git"
    }
  }
```

```
},
"generated_by": "David E. Wheeler",
"meta-spec": {
  "version": "1.0.0",
  "url": "https://pgxn.org/meta/spec.txt"
},
"tags": [
  "variadic function",
  "ordered pair",
  "pair",
  "key value",
  "key value pair"
]
}
```

```
},
"resources": {
  "bugtracker": {
    "web": "https://github.com/theory/kv-pair/issues/"
  },
  "repository": {
    "url": "git://github.com/theory/kv-pair.git",
    "web": "https://github.com/theory/kv-pair/",
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]
}
```

The background features a vibrant, abstract design with overlapping organic shapes in shades of pink, magenta, and orange. The shapes are fluid and rounded, creating a sense of movement and depth. The colors transition from a deep magenta on the left to a bright orange on the right.

**MANAGER**



# Manager

[manager.pgxn.org](https://manager.pgxn.org)

# Manager

[manager.pgxn.org](http://manager.pgxn.org)

**Manages extension distributions**

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[manager.pgxn.org](http://manager.pgxn.org)

**Manages extension distributions**

**Release, own, grant**

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**Release, own, grant**

**Enforces unique names**

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**Basic Auth, simple API**

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**Most complicated component**

# Manager

[manager.pgxn.org](http://manager.pgxn.org)

**Manages extension distributions**

**Release, own, grant**

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**Basic Auth, simple API**

**Most complicated component**

**Not just because user auth**

# Manager

[manager.pgxn.org](http://manager.pgxn.org)

**Manages extension distributions**

**Release, own, grant**

**Enforces unique names**

**Basic Auth, simple API**

**Most complicated component**

**Not just because user auth**

**No other part need be complex**





**PGXN Manager**

Release it on PGXN!

Upload a Distribution

Your Distributions

Show Permissions

Edit Account

Change Password

# Upload a Distribution

So you've developed a PGXN extension and want to distribute it on PGXN. This is the place to upload it! Just find your distribution archive (.zip, .tgz, etc.) in the upload field below and you'll be good to go.

Don't know what this means? Want to know how to create great PostgreSQL extensions and distribute them to your fellow PostgreSQL enthusiasts via PGXN? Take a gander at our [How to](#) for all the juicy details. It's not hard, we promise.

## Upload a Distribution Archive

Archive:  no file selected

Release It!

PGXN::Manager v0.31.1. [Distributed](#) under the [PostgreSQL License](#).



## PGXN Manager

Release it on PGXN!

Upload a Distribution

Your Distributions

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### Upload a Distribution Archive

Archive:  no file selected

PGXN::Manager v0.31.1. [Distributed](#) under the

**Submit archive  
with META.json**

# HOW DOES PUBLISHING WORK?

# Upload Processing

[manager.pgxn.org](https://manager.pgxn.org)

# Upload Processing

[manager.pgxn.org](http://manager.pgxn.org)

**Extracts uploaded archive**

# Upload Processing

[manager.pgxn.org](http://manager.pgxn.org)

**Extracts uploaded archive**

**Converts to zip**

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**Ensures {name}-{version} prefix**

# Upload Processing

[manager.pgxn.org](http://manager.pgxn.org)

**Extracts uploaded archive**

**Converts to zip**

**Ensures {name}-{version} prefix**

**Validates META.json**



# Upload Processing

manager.pgxn.org

**Extracts uploaded archive**

**Converts to zip**

**Ensures {name}-{version} prefix**

**Validates META.json**

**Calls SQL function `add_distribution()`**

# Upload Processing

manager.pgxn.org

**Extracts uploaded archive**

**Converts to zip**

**Ensures {name}-{version} prefix**

**Validates META.json**

**Calls SQL function `add_distribution()`**

**Writes files to root mirror**

# `add_distribution()`

[manager.pgxn.org](http://manager.pgxn.org)

# `add_distribution()`

`manager.pgxn.org`

**Validates META.json**

# **add\_distribution()**

**manager.pgxn.org**

**Validates META.json**

**Adds SHA-1, user, date**

# **add\_distribution()**

manager.pgxn.org

**Validates META.json**

**Adds SHA-1, user, date**

**Checks permissions**

# **add\_distribution()**

manager.pgxn.org

**Validates META.json**

**Inserts the record**

**Adds SHA-1, user, date**

**Checks permissions**

# **add\_distribution()**

manager.pgxn.org

**Validates META.json**

**Inserts the record**

**Adds SHA-1, user, date**

**Queues notification**

**Checks permissions**



# **add\_distribution()**

manager.pgxn.org

**Validates META.json**

**Inserts the record**

**Adds SHA-1, user, date**

**Queues notification**

**Checks permissions**

**Returns files to write**

# Release Files Updated

[manager.pgxn.org](http://manager.pgxn.org)

# Release Files Updated

[manager.pgxn.org](http://manager.pgxn.org)

## **META.json**

# Release Files Updated

[manager.pgxn.org](http://manager.pgxn.org)

**META.json**

**Distribution Releases**

# Release Files Updated

[manager.pgxn.org](http://manager.pgxn.org)

**META.json**

**Distribution Releases**

**Extension Releases**

# Release Files Updated

[manager.pgxn.org](https://manager.pgxn.org)

**META.json**

**User Releases**

**Distribution Releases**

**Extension Releases**

# Release Files Updated

[manager.pgxn.org](https://manager.pgxn.org)

**META.json**

**User Releases**

**Distribution Releases**

**Tag Releases**

**Extension Releases**

# Release Files Updated

[manager.pgxn.org](https://manager.pgxn.org)

**META.json**

**Distribution Releases**

**Extension Releases**

**User Releases**

**Tag Releases**

**Recent Releases**



# Release Files Updated

[manager.pgxn.org](https://manager.pgxn.org)

**META.json**

**Distribution Releases**

**Extension Releases**

**User Releases**

**Tag Releases**

**Recent Releases**

**Summary Stats**

# Release Files Updated

manager.pgxn.org

**All written to  
root mirror**

**META.json**

**Distribution Releases**

**Extension Releases**

**User Releases**

**Tag Releases**

**Recent Releases**

**Summary Stats**

# Consumer

[manager.pgxn.org](https://manager.pgxn.org)

# Consumer

[manager.pgxn.org](http://manager.pgxn.org)

**Consumes queued messages**

# Consumer

[manager.pgxn.org](http://manager.pgxn.org)

**Consumes queued messages**

**Releases, new user, new mirror**

# Consumer

`manager.pgxn.org`

**Consumes queued messages**

**Releases, new user, new mirror**

**Dispatches to handlers**

# Consumer

manager.pgxn.org

**Consumes queued messages**

**Releases, new user, new mirror**

**Dispatches to handlers**

**Mastodon, Twitter ( RIP)**

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[manager.pgxn.org](https://manager.pgxn.org)

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**Mastodon, Twitter ( RIP)**

**Extensible; add Webhooks?**



# Consumer

[manager.pgxn.org](https://manager.pgxn.org)

**Consumes queued messages**

**Releases, new user, new mirror**

**Dispatches to handlers**

**Mastodon, Twitter (🪦 RIP)**

**Extensible; add Webhooks?**

**<https://botsin.space/@pgxn>**

**ROOT MIRROR**

# ROOT MIRROR

[master.pgxn.org](http://master.pgxn.org)

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[master.pgxn.org](https://master.pgxn.org)

**Directories of JSON files**

# ROOT MIRROR

[master.pgxn.org](https://master.pgxn.org)

**Directories of JSON files**

**Fully static REST API**

# **ROOT MIRROR**

**master.pgxn.org**

**Directories of JSON files**

**Fully static REST API**

**META.json**

# ROOT MIRROR

[master.pgxn.org](https://master.pgxn.org)

**Directories of JSON files**

**Fully static REST API**

**META.json**

**Zip file**

# **ROOT MIRROR**

[master.pgxn.org](https://master.pgxn.org)

**Directories of JSON files**

**Fully static REST API**

**META.json**

**Zip file**

**Derived metadata**



# ROOT MIRROR

master.pgxn.org

**Directories of JSON files**

**Fully static REST API**

**META.json**

**Zip file**

**Derived metadata**

**Release, user, tags, etc.**

index.json

# index.json

```
{  
  "download": "/dist/{dist}/{version}/{dist}-{version}.zip",  
  "readme": "/dist/{dist}/{version}/README.txt",  
  "meta": "/dist/{dist}/{version}/META.json",  
  "dist": "/dist/{dist}.json",  
  "extension": "/extension/{extension}.json",  
  "user": "/user/{user}.json",  
  "tag": "/tag/{tag}.json",  
  "stats": "/stats/{stats}.json",  
  "mirrors": "/meta/mirrors.json",  
  "spec": "/meta/spec.{format}"  
}
```

# index.json

```
{  
  "download":  "/dist/{dist}/{version}/{dist}-{version}.zip",  
  "readme":    "/dist/{dist}/{version}/README.txt",  
  "meta":     "/dist/{dist}/{version}/META.json",  
  "dist":     "/dist/{dist}.json",  
  "extension": "/extension/{extension}.json",  
  "user":     "/user/{user}.json",  
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  "dist": "/dist/{dist}.json",  
  "extension": "/extension/{extension}.json",  
  "user": "/user/{user}.json",  
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}
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  "dist": "/dist/{dist}.json",  
  "extension": "/extension/{extension}.json",  
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  "dist": "/dist/{dist}.json",  
  "extension": "/extension/{extension}.json",  
  "user": "/user/{user}.json",  
  "tag": "/tag/{tag}.json",  
  "stats": "/stats/{stats}.json",  
  "mirrors": "/meta/mirrors.json",  
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}
```

# index.json

```
{  
  "download": "/dist/{dist}/{version}/{dist}-{version}.zip",  
  "readme": "/dist/{dist}/{version}/README.txt",  
  "meta": "/dist/{dist}/{version}/META.json",  
  "dist": "/dist/{dist}.json",  
  "extension": "/extension/{extension}.json",  
  "user": "/user/{user}.json",  
  "tag": "/tag/{tag}.json",  
  "stats": "/stats/{stats}.json",  
  "mirrors": "/meta/mirrors.json",  
  "spec": "/meta/spec.{format}"  
}
```



# Mirroring

# Mirroring

```
mkdir pgxn && cd pgxn
```

# Mirroring

```
mkdir pgxn && cd pgxn
```

```
rsync -az rsync://master.pgxn.org/pgxn .
```

# Mirroring

```
mkdir pgxn && cd pgxn  
rsync -az rsync://master.pgxn.org/pgxn .  
python -m http.server 8000
```

# Mirroring

```
mkdir pgxn && cd pgxn  
rsync -az rsync://master.pgxn.org/pgxn .  
python -m http.server 8000
```

```
0 20 * * * /usr/bin/rsync -az --delete rsync://master.pgxn.org/pgxn /pgxn
```

`/dist/{dist}.json`

# /dist/{dist}.json

```
> curl -s http://localhost:8000/dist/pair.json | yq -oj
```

# /dist/{dist}.json

```
> curl -s http://localhost:8000/dist/pair.json | yq -oj
```

```
{  
  "name": "pair",  
  "releases": {  
    "stable": [  
      { "version": "0.1.7", "date": "2020-10-25T21:54:02Z" },  
      { "version": "0.1.6", "date": "2018-11-10T20:55:55Z" },  
      { "version": "0.1.5", "date": "2011-11-11T17:56:30Z" },  
      { "version": "0.1.4", "date": "2011-11-11T06:52:41Z" },  
      { "version": "0.1.3", "date": "2011-05-12T18:55:30Z" },  
      { "version": "0.1.2", "date": "2011-04-20T23:47:22Z" },  
      { "version": "0.1.1", "date": "2010-10-29T22:44:42Z" },  
      { "version": "0.1.0", "date": "2010-10-19T03:59:54Z" }  
    ]  
  }  
}
```



# /dist/{dist}.json

```
> curl -s http://localhost:8000/dist/pair.json | yq -oj
```

```
{  
  "name": "pair",  
  "releases": [  
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      { "version": "0.1.7", "date": "2020-10-25T21:54:02Z" },  
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    ]  
  ]  
}
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# /dist/{dist}.json

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```

```
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  "name": "pair",  
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      { "version": "0.1.5", "date": "2011-10-25T21:54:02Z" },  
      { "version": "0.1.4", "date": "2011-10-11T20:55:55Z" },  
      { "version": "0.1.5", "date": "2011-11-11T17:56:30Z" },  
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      { "version": "0.1.3", "date": "2011-05-12T18:55:30Z" },  
      { "version": "0.1.2", "date": "2011-04-20T23:47:22Z" },  
      { "version": "0.1.1", "date": "2010-10-29T22:44:42Z" },  
      { "version": "0.1.0", "date": "2010-10-19T03:59:54Z" }  
    ]  
  ]  
}
```

**Also: testing,  
unstable**

/extension/{extension}.json

# /extension/{extension}.json

```
> curl -s http://localhost:8000/extension/pair.json | yq -oj
```

# /extension/{extension}.json

```
> curl -s http://localhost:8000/extension/pair.json | yq -oj
```

```
{  
  "extension": "pair",  
  "latest": "stable",  
  "stable": {  
    "dist": "pair",  
    "version": "0.1.7",  
    "sha1": "5b9e3ba948b18703227e4dea17696c0f1d971759"  
  },  
  "versions": {  
    "0.1.2": [  
      { "dist": "pair", "version": "0.1.7" },  
      { "dist": "pair", "version": "0.1.6" },  
      { "dist": "pair", "version": "0.1.5" },  
      { "dist": "pair", "version": "0.1.4" },  
      { "dist": "pair", "version": "0.1.2" }  
    ],  
    "0.1.1": [  
      { "dist": "pair", "version": "0.1.1" }  
    ]  
  }  
}
```

# /extension/{extension}.json

```
> curl -s http://localhost:8000/extension/pair.json | yq -oj
```

```
{  
  "extension": "pair",  
  "latest": "stable",  
  "stable": {  
    "dist": "pair",  
    "version": "0.1.7",  
    "sha1": "5b9e3ba948b18703227e4dea17696c0f1d971759"  
  },  
  "versions": [  
    "0.1.2": [  
      { "dist": "pair", "version": "0.1.7" },  
      { "dist": "pair", "version": "0.1.6" },  
      { "dist": "pair", "version": "0.1.5" },  
      { "dist": "pair", "version": "0.1.4" },  
      { "dist": "pair", "version": "0.1.2" }  
    ],  
    "0.1.1": [  
      { "dist": "pair", "version": "0.1.1" }  
    ]  
  ]  
}
```

**Releases containing v0.1.2**

# /extension/{extension}.json

```
> curl -s http://localhost:8000/extension/pair.json | yq -oj
```

```
{  
  "extension": "pair",  
  "latest": "stable",  
  "stable": {  
    "dist": "pair",  
    "version": "0.1.7",  
    "sha1": "5b9e3ba948b18703227e4dea17696c0f1d971759"  
  },  
  "versions": {  
    "0.1.2": [  
      { "dist": "pair", "version": "0.1.7" },  
      { "dist": "pair", "version": "0.1.6" },  
      { "dist": "pair", "version": "0.1.5" },  
      { "dist": "pair", "version": "0.1.4" },  
      { "dist": "pair", "version": "0.1.2" }  
    ],  
    "0.1.1": [  
      { "dist": "pair", "version": "0.1.1" }  
    ]  
  }  
}
```

**Releases containing v0.1.1**

```
/dist/{dist}/{version}/META.json
```



# /dist/{dist}/{version}/META.json

```
> curl -s http://localhost:8000/dist/pair/0.1.7/META.json | yq -oj
```

# /dist/{dist}/{version}/META.json

```
> curl -s http://localhost:8000/dist/pair/0.1.7/META.json | yq -oj
{
  "name": "pair",
  "abstract": "A key/value pair data type",
  "description": "This library contains a single PostgreSQL extension, a key/value pair data
  "version": "0.1.6",
  "date": "2018-11-10T20:55:55Z",
  "maintainer": [
    "David E. Wheeler <david@justatheory.com>"
  ],
  "release_status": "stable",
  "user": "theory",
  "sha1": "bdfc5babdd536dbe53a558cb9fefaedcc0bd8731",
  "license": "postgresql",
  "prereqs": {
    "runtime": {
      "requires": {
        "PostgreSQL": "8.3.0"
      }
    }
  }
}
```

# /dist/{dist}/{version}/META.json

```
> curl -s http://localhost:8000/dist/pair/0.1.7/META.json | yq -oj
{
  "name": "pair",
  "abstract": "A key/value pair data type",
  "description": "This library contains a single PostgreSQL extension, a key/value pair data
  "version": "0.1.6",
  "date": "2018-11-10T20:55:55Z",
  "maintainer": [
    "David E. Wheeler <david@justatheory.com>"
  ],
  "release status": "stable",
  "user": "theory",
  "sha1": "bdfc5babdd536dbe53a558cb9fefaedcc0bd8731"
  "license": "postgresql",
  "prereqs": {
    "runtime": {
      "requires": {
        "PostgreSQL": "8.3.0"
      }
    }
  }
}
```

/user/{user}.json

# /user/{user}.json

```
> curl -s http://localhost:8000/user/furstenheim.json | yq -oj
```

# /user/{user}.json

```
> curl -s http://localhost:8000/user/furstenheim.json | yq -oj
{
  "nickname": "furstenheim",
  "name": "Gabriel Furstenheim",
  "email": "furstenheim@gmail.com",
  "uri": "https://github.com/furstenheim",
  "twitter": "furstenheim",
  "releases": {
    "is_jsonb_valid": {
      "stable": [
        { "version": "0.0.1", "date": "2017-08-17T17:12:06Z" }
      ]
    },
    "jsonb_deep_sum": {
      "stable": [
        { "version": "0.0.2", "date": "2020-02-22T16:23:16Z" },
        { "version": "0.0.1", "date": "2017-06-15T20:40:03Z" }
      ]
    }
  }
}
```

# /user/{user}.json

```
> curl -s http://localhost:8000/user/furstenheim.json | yq -oj
```

```
{  
  "nickname": "furstenheim",  
  "name": "Gabriel Furstenheim",  
  "email": "furstenheim@gmail.com",  
  "uri": "https://github.com/furstenheim",  
  "twitter": "furstenheim",  
  "releases": {  
    "is_jsonb_valid": {  
      "stable": [  
        { "version": "0.0.1", "date": "2017-08-17T17:12:06Z" }  
      ]  
    },  
    "jsonb_deep_sum": {  
      "stable": [  
        { "version": "0.0.2", "date": "2020-02-22T16:23:16Z" },  
        { "version": "0.0.1", "date": "2017-06-15T20:40:03Z" }  
      ]  
    }  
  }  
}
```

**All releases by user**

/tag/{tag}.json



# /tag/{tag}.json

```
> curl -s http://localhost:8000/tag/messaging.json | yq -oj
```

# /tag/{tag}.json

```
> curl -s http://localhost:8000/tag/messaging.json | yq -oj
{
  "tag": "messaging",
  "releases": {
    "pg_message_queue": {
      "stable": [
        { "version": "0.2.1", "date": "2013-01-19T11:15:54Z" },
        { "version": "0.2.0", "date": "2013-01-04T06:06:18Z" },
        { "version": "0.1.0", "date": "2012-09-21T09:48:00Z" }
      ]
    },
    "pgmq": {
      "stable": [
        { "version": "1.1.1", "date": "2024-01-11T19:55:54Z" },
        { "version": "0.2.0", "date": "2023-02-26T01:48:04Z" }
      ]
    }
  }
}
```

# /tag/{tag}.json

```
> curl -s http://localhost:8000/tag/messaging.json | yq -oj
```

```
{  
  "tag": "messaging",  
  "releases": {  
    "pg_message_queue": {  
      "stable": [  
        { "version": "0.2.1", "date": "2013-01-19T11:15:54Z" },  
        { "version": "0.2.0", "date": "2013-01-04T06:06:18Z" },  
        { "version": "0.1.0", "date": "2012-09-21T09:48:00Z" }  
      ],  
    },  
    "pgmq": {  
      "stable": [  
        { "version": "1.1.1", "date": "2024-01-11T19:55:54Z" },  
        { "version": "0.2.0", "date": "2023-02-26T01:48:04Z" }  
      ],  
    }  
  }  
}
```

**All releases  
with tag**



**DEMO**

**SEARCH API**

# API

[api.pgxn.org](https://api.pgxn.org)

# API

[api.pgxn.org](https://api.pgxn.org)

**It's a mirror!**

# **API**

[api.pgxn.org](https://api.pgxn.org)

**It's a mirror!**

**Syncs every five minutes**



# API

[api.pgxn.org](http://api.pgxn.org)

**It's a mirror!**

**Syncs every five minutes**

**Iterates over rsync log**

# API

[api.pgxn.org](http://api.pgxn.org)

**It's a mirror!**

**Transforms things**

**Syncs every five minutes**

**Iterates over rsync log**

# API

[api.pgxn.org](http://api.pgxn.org)

**It's a mirror!**

**Transforms things**

**Syncs every five minutes**

**Robust API**

**Iterates over rsync log**

# API

[api.pgxn.org](http://api.pgxn.org)

**It's a mirror!**

**Syncs every five minutes**

**Iterates over rsync log**

**Transforms things**

**Robust API**

**No database!**

# API Release Sync

[api.pgxn.org](https://api.pgxn.org)

# API Release Sync

[api.pgxn.org](https://api.pgxn.org)

**Validates Checksum**

# API Release Sync

[api.pgxn.org](https://api.pgxn.org)

**Validates Checksum**

**Unpacks zip file**

# API Release Sync

[api.pgxn.org](http://api.pgxn.org)

**Validates Checksum**

**Unpacks zip file**

**Extends META.json**



# API Release Sync

[api.pgxn.org](http://api.pgxn.org)

**Validates Checksum**

**Unpacks zip file**

**Extends META.json**

**Doc files**

# API Release Sync

[api.pgxn.org](http://api.pgxn.org)

**Validates Checksum**

**Unpacks zip file**

**Extends META.json**

**Doc files**

**Special files**

# API Release Sync

[api.pgxn.org](http://api.pgxn.org)

**Validates Checksum**

**Unpacks zip file**

**Extends META.json**

**Doc files**

**Special files**

**Release history**

# API Release Sync

[api.pgxn.org](http://api.pgxn.org)

**Validates Checksum**

**Unpacks zip file**

**Extends META.json**

**Doc files**

**Special files**

**Release history**

**Updates older release histories**

# API Release Sync

[api.pgxn.org](http://api.pgxn.org)

**Validates Checksum**

**Unpacks zip file**

**Extends META.json**

**Doc files**

**Special files**

**Release history**

**Updates older release histories**

**Extends tag and user JSON**

# API Release Sync

[api.pgxn.org](http://api.pgxn.org)

**Validates Checksum**

**Unpacks zip file**

**Extends META.json**

**Doc files**

**Special files**

**Release history**

**Updates older release histories**

**Extends tag and user JSON**

**Release abstracts**

# API Release Sync

[api.pgxn.org](http://api.pgxn.org)

**Validates Checksum**

**Unpacks zip file**

**Extends META.json**

**Doc files**

**Special files**

**Release history**

**Updates older release histories**

**Extends tag and user JSON**

**Release abstracts**

**Extends extension JSON**

# API Release Sync

[api.pgxn.org](http://api.pgxn.org)

**Validates Checksum**

**Unpacks zip file**

**Extends META.json**

**Doc files**

**Special files**

**Release history**

**Updates older release histories**

**Extends tag and user JSON**

**Release abstracts**

**Extends extension JSON**

**Doc files**



# API Release Sync

[api.pgxn.org](http://api.pgxn.org)

**Validates Checksum**

**Unpacks zip file**

**Extends META.json**

**Doc files**

**Special files**

**Release history**

**Updates older release histories**

**Extends tag and user JSON**

**Release abstracts**

**Extends extension JSON**

**Doc files**

**Release dates**

# Markup Processing

[api.pgxn.org](http://api.pgxn.org)

# Markup Processing

[api.pgxn.org](http://api.pgxn.org)

**Finds markup files**

# Markup Processing

[api.pgxn.org](http://api.pgxn.org)

**Finds markup files**

**Generates HTML**

# Markup Processing

[api.pgxn.org](http://api.pgxn.org)

**Finds markup files**

**Generates HTML**

**Saves for API**

# Markup Processing

[api.pgxn.org](http://api.pgxn.org)

**Finds markup files**

**Generates HTML**

**Saves for API**

**Uses Text::Markup**

# Markup Processing

api.pgxn.org

**Finds markup files**

**Generates HTML**

**Saves for API**

**Uses Text::Markup**

**Many formats:**

**AsciiDoc**

**BBcode**

**Creole**

**HTML**

**Markdown**

**MediaWiki**

**MultiMarkdown**

**Pod**

**reStructuredText**

**Textile**

**Trac**

# Full Text Indexing

[api.pgxn.org](http://api.pgxn.org)



# Full Text Indexing

[api.pgxn.org](http://api.pgxn.org)

**Also indexes text**

# Full Text Indexing

[api.pgxn.org](http://api.pgxn.org)

Also indexes text

Apache Lucy ( RIP)

# Full Text Indexing

[api.pgxn.org](http://api.pgxn.org)

Also indexes text

Apache Lucy ( RIP)

“Loose C” Lucene port

# Full Text Indexing

[api.pgxn.org](http://api.pgxn.org)

Also indexes text

Apache Lucy ( RIP)

“Loose C” Lucene port

Local index files

# Full Text Indexing

[api.pgxn.org](http://api.pgxn.org)

Also indexes text

Apache Lucy ( RIP)

“Loose C” Lucene port

Local index files

No separate service

# Full Text Indexing

[api.pgxn.org](http://api.pgxn.org)

**Also indexes text**

**Apache Lucy ( RIP)**

**“Loose C” Lucene port**

**Local index files**

**No separate service**

**Super Fast**

# Full Text Indexing

[api.pgxn.org](http://api.pgxn.org)

**Also indexes text**

**Apache Lucy (🪦 RIP)**

**“Loose C” Lucene port**

**Local index files**

**No separate service**

**Super Fast**

**Indexes:**

**Distributions**

**Extensions**

**Tags**

**Documentation**

**Users**

# User List

api.pgxn.org



# User List

api.pgxn.org

Updates user list

# User List

api.pgxn.org

**Updates user list**

**Indexed by first letter**

# User List

api.pgxn.org

**Updates user list**

**Indexed by first letter**

**{letter}.json files**

# User List

api.pgxn.org

**Updates user list**

**Indexed by first letter**

**{letter}.json files**

**Lists each username**

# User List

api.pgxn.org

Updates user list

Indexed by first letter

{letter}.json files

Lists each username

```
> curl https://api.pgxn.org/users/q.json \
-s | yq -oj
[
  {
    "name": "qaxwforc1w",
    "user": "qaxwforc1w"
  },
  {
    "name": "Quinn Weaver",
    "user": "qdw"
  },
  {
    "name": "qsqcmsopjc",
    "user": "qsqcmsopjc"
  }
]
```

index.json

# index.json

```
{  
  "dist": "/dist/{dist}.json",  
  "download": "/dist/{dist}/{version}/{dist}-{version}.zip",  
  "extension": "/extension/{extension}.json",  
  "htmldoc": "/dist/{dist}/{version}/{+docpath}.html",  
  "meta": "/dist/{dist}/{version}/META.json",  
  "mirrors": "/meta/mirrors.json",  
  "readme": "/dist/{dist}/{version}/README.txt",  
  "search": "/search/{in}/",  
  "source": "/src/{dist}/{dist}-{version}/",  
  "spec": "/meta/spec.{format}",  
  "stats": "/stats/{stats}.json",  
  "tag": "/tag/{tag}.json",  
  "user": "/user/{user}.json",  
  "userlist": "/users/{letter}.json"  
}
```

# index.json

```
{  
  "dist": "/dist/{dist}.json",  
  "download": "/dist/{dist}/{version}/{dist}-{version}.zip",  
  "extension": "/extension/{extension}.json",  
  "htmldoc": "/dist/{dist}/{version}/{+docpath}.html",  
  "meta": "/dist/{dist}/{version}/META.json",  
  "mirrors": "/meta/mirrors.json",  
  "readme": "/dist/{dist}/{version}/README.txt",  
  "search": "/search/{in}/",  
  "source": "/src/{dist}/{dist}-{version}/",  
  "spec": "/meta/spec.{format}",  
  "stats": "/stats/{stats}.json",  
  "tag": "/tag/{tag}.json",  
  "user": "/user/{user}.json",  
  "userlist": "/users/{letter}.json"  
}
```



# index.json

```
{  
  "dist": "/dist/{dist}.json",  
  "download": "/dist/{dist}/{version}/{dist}-{version}.zip",  
  "extension": "/extension/{extension}.json",  
  "htmldoc": "/dist/{dist}/{version}/{+docpath}.html",  
  "meta": "/dist/{dist}/{version}/META.json",  
  "mirrors": "/meta/mirrors.json",  
  "readme": "/dist/{dist}/{version}/README.txt",  
  "search": "/search/{in}/",  
  "source": "/src/{dist}/{dist}-{version}/",  
  "spec": "/meta/spec.{format}",  
  "stats": "/stats/{stats}.json",  
  "tag": "/tag/{tag}.json",  
  "user": "/user/{user}.json",  
  "userlist": "/users/{letter}.json"  
}
```

# index.json

```
{  
  "dist": "/dist/{dist}.json",  
  "download": "/dist/{dist}/{version}/{dist}-{version}.zip",  
  "extension": "/extension/{extension}.json",  
  "htmldoc": "/dist/{dist}/{version}/{+docpath}.html",  
  "meta": "/dist/{dist}/{version}/META.json",  
  "mirrors": "/meta/mirrors.json",  
  "readme": "/dist/{dist}/{version}/README.txt",  
  "search": "/search/{in}/",  
  "source": "/src/{dist}/{dist}-{version}/",  
  "spec": "/meta/spec.{format}",  
  "stats": "/stats/{stats}.json",  
  "tag": "/tag/{tag}.json",  
  "user": "/user/{user}.json",  
  "userlist": "/users/{letter}.json"  
}
```

# Root /dist/{dist}.json

```
{
  "name": "pair",
  "releases": {
    "stable": [
      { "version": "0.1.7", "date": "2020-10-25T21:54:02Z" },
      { "version": "0.1.6", "date": "2018-11-10T20:55:55Z" },
      { "version": "0.1.5", "date": "2011-11-11T17:56:30Z" },
      { "version": "0.1.4", "date": "2011-11-11T06:52:41Z" },
      { "version": "0.1.3", "date": "2011-05-12T18:55:30Z" },
      { "version": "0.1.2", "date": "2011-04-20T23:47:22Z" },
      { "version": "0.1.1", "date": "2010-10-29T22:44:42Z" },
      { "version": "0.1.0", "date": "2010-10-19T03:59:54Z" }
    ]
  }
}
```

```
/dist/{dist}.json
```

`/dist/{dist}.json`

`> curl -s https://api.pgxn.org/dist/pair.json | yq -oj`

# /dist/{dist}.json

```
> curl -s https://api.pgxn.org/dist/pair.json | yq -oj
```

```
{  
  "abstract": "A key/value pair data type",  
  "date": "2020-10-25T21:54:02Z",  
  "description": "This library contains a single PostgreSQL extension, a  
  "docs": {  
    "README": {  
      "title": "pair 0.1.7"  
    },  
    "doc/pair": {  
      "abstract": "A key/value pair data type",  
      "title": "pair 0.1.2"  
    }  
  },  
  "license": "postgresql",  
  "maintainer": [  
    "David E. Wheeler <david@justatheory.com>"  
  ]  
}
```

**Merges META.json**

# /dist/{dist}.json

```
> curl -s https://api.pgxn.org/dist/pair.json | yq -oj
{
  "abstract": "A key/value pair data type",
  "date": "2020-10-25T21:54:02Z",
  "description": "This library contains a single PostgreSQL extension, a
  "docs": {
    "README": {
      "title": "pair 0.1.7"
    },
    "doc/pair": {
      "abstract": "A key/value pair data type",
      "title": "pair 0.1.2"
    }
  },
  "license": "postgresql",
  "maintainer": [
    "David E. Wheeler <david@justatheory.com>"
  ]
}
```

**Adds docs**

`/dist/{dist}/{version}/{+docpath}.html`



`/dist/{dist}/{version}/{+docpath}.html`

`> curl -s https://api.pgxn.org/dist/pair/0.1.7/doc/pair.html | head -20`

`/dist/{dist}/{version}/{+docpath}.html`

```
> curl -s https://api.pgxn.org/dist/pair/0.1.7/doc/pair.html | head -20
```

```
<div id="pgxndoc">  
  <div id="pgxntoc">  
    <h3>Contents</h3>  
    <ul class="pgxntocroot">  
      <li><a href="#pair.0.1.2">pair 0.1.2</a>  
        <ul>  
          <li><a href="#Synopsis">Synopsis</a></li>  
          <li><a href="#Description">Description</a></li>  
          <li><a href="#Usage">Usage</a></li></ul></li>  
    </ul>  
  </div>  
  <div id="pgxnbod">  
<h1 id="pair.0.1.2">pair 0.1.2</h1>  
  
<h2 id="Synopsis">Synopsis</h2>
```

**Generated from  
Markdown file**

/extension/{extension}.json

# /extension/{extension}.json

```
> curl -s https://api.pgxn.org/extension/pair.json | yq -oj '.stable'
```

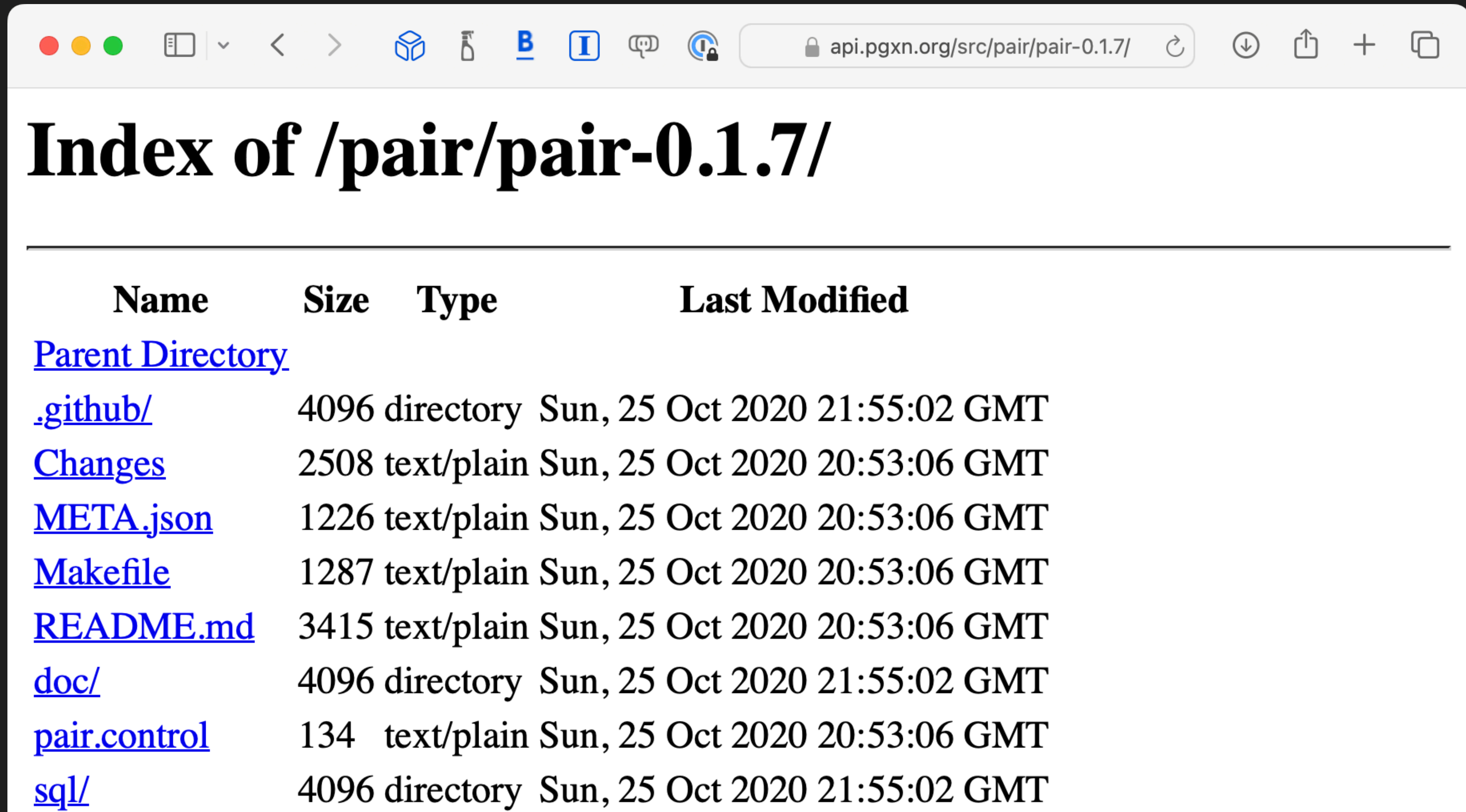
# /extension/{extension}.json

```
> curl -s https://api.pgxn.org/extension/pair.json | yq -oj '.stable'
{
  "dist": "pair",
  "sha1": "5b9e3ba948b18703227e4dea17696c0f1d971759",
  "version": "0.1.7",
  "abstract": "A key/value pair data type",
  "docpath": "doc/pair"
}
```

**Injected by  
API**

/src/{dist}/{dist}-{version}/

/src/{dist}/{dist}-{version}/



The image shows a screenshot of a web browser window. The address bar contains the URL "api.pgxn.org/src/pair/pair-0.1.7/". The main content area displays the title "Index of /pair/pair-0.1.7/" followed by a table listing the contents of the directory. The table has four columns: Name, Size, Type, and Last Modified. The entries include a parent directory link, several files (.github/, Changes, META.json, Makefile, README.md, pair.control, sql/), and subdirectories (doc/ and sql/).

Name	Size	Type	Last Modified
<a href="#">Parent Directory</a>			
<a href="#">.github/</a>	4096	directory	Sun, 25 Oct 2020 21:55:02 GMT
<a href="#">Changes</a>	2508	text/plain	Sun, 25 Oct 2020 20:53:06 GMT
<a href="#">META.json</a>	1226	text/plain	Sun, 25 Oct 2020 20:53:06 GMT
<a href="#">Makefile</a>	1287	text/plain	Sun, 25 Oct 2020 20:53:06 GMT
<a href="#">README.md</a>	3415	text/plain	Sun, 25 Oct 2020 20:53:06 GMT
<a href="#">doc/</a>	4096	directory	Sun, 25 Oct 2020 21:55:02 GMT
<a href="#">pair.control</a>	134	text/plain	Sun, 25 Oct 2020 20:53:06 GMT
<a href="#">sql/</a>	4096	directory	Sun, 25 Oct 2020 21:55:02 GMT

`/search/{in}/q={query}`



# /search/{in}/q={query}

```
> curl -s 'https://api.pgxn.org/search/extensions?q=pair' | yq -oj
```

# /search/{in}/q={query}

```
> curl -s 'https://api.pgx.org/search/extensions?q=pair' | yq -oj
```

```
{  
  "query": "pair",  
  "count": 2,  
  "items": [  
    {  
      "extension": "pair",  
      "score": "3.691",  
      "user": "theory",  
      "abstract": "A key/value pair data type",  
      "user_name": "David E. Wheeler",  
      "docpath": "doc/pair",  
      "date": "2020-10-25T21:54:02Z",  
      "excerpt": "A key/value <strong>pair</strong> data type",  
      "version": "0.1.7",  
      "dist": "pair"  
    },  
    {  
      "extension": "unnest_ordinality",  
      "score": "0.144",  
      "date": "2013-04-19T16:39:07Z",  
      "docpath": "doc/unnest_ordinality",  
      "excerpt": "turn an array into a set of (element_number, element) <strong>pairs</strong>",  
      "version": "1.0.1",
```

**Also limit & offset**

# /search/{in}/q={query}

```
> curl -s 'https://api.pgx.org/search/extensions?q=pair' | yq -oj
```

```
{  
  "query": "pair",  
  "count": 2,  
  "hits": [  
    {  
      "extension": "pair",  
      "score": "3.691",  
      "user": "theory",  
      "abstract": "A key/value pair data type",  
      "user_name": "David E. Wheeler",  
      "docpath": "doc/pair",  
      "date": "2020-10-25T21:54:02Z",  
      "excerpt": "A key/value <strong>pair</strong> data type",  
      "version": "0.1.7",  
      "dist": "pair"  
    },  
    {  
      "extension": "unnest_ordinality",  
      "score": "0.144",  
      "date": "2013-04-19T16:39:07Z",  
      "docpath": "doc/unnest_ordinality",  
      "excerpt": "turn an array into a set of (element_number, element) <strong>pairs</strong>",  
      "version": "1.0.1",
```

# /search/{in}/q={query}

```
> curl -s 'https://api.pgx.org/search/extensions?q=pair' | yq -oj
```

```
{  
  "query": "pair",  
  "count": 2,  
  "hits": [  
    {  
      "extension": "pair",  
      "score": "3.691",  
      "user": "theory",  
      "abstract": "A key/value pair data type",  
      "user_name": "David E. Wheeler",  
      "docpath": "doc/pair",  
      "date": "2020-10-25T21:54:02Z",  
      "excerpt": "A key/value <strong>pair</strong> data type",  
      "version": "0.1.7",  
      "dist": "pair"  
    },  
    {  
      "extension": "unnest_ordinality",  
      "score": "0.144",  
      "date": "2013-04-19T16:39:07Z",  
      "docpath": "doc/unnest_ordinality",  
      "excerpt": "turn an array into a set of (element_number, element) <strong>pairs</strong>",  
      "version": "1.0.1",
```

# /search/{in}/q={query}

```
> curl -s 'https://api.pgx.org/search/extensions?q=pair' | yq -oj
```

```
{  
  "query": "pair",  
  "count": 2,  
  "hits": [  
    {  
      "extension": "pair",  
      "score": "3.691",  
      "user": "theory",  
      "abstract": "A key/value pair data type",  
      "user_name": "David E. Wheeler",  
      "docpath": "doc/pair",  
      "id": "2020-10-25T21:54:00Z",  
      "excerpt": "A key/value <strong>pair</strong> data type",  
      "version": "0.1.1",  
      "dist": "pair"  
    },  
    {  
      "extension": "unnest_ordinality",  
      "score": "0.144",  
      "date": "2013-04-19T16:39:07Z",  
      "docpath": "doc/unnest_ordinality",  
      "excerpt": "turn an array into a set of (element_number, element) <strong>pairs</strong>",  
      "version": "1.0.1",
```

# /search/{in}/q={query}

```
> curl -s 'https://api.pgx.org/search/extensions?q=pair' | yq -oj
```

```
{  
  "query": "pair",  
  "count": 2,  
  "hits": [  
    {  
      "extension": "pair",  
      "score": "3.691",  
      "user": "theory",  
      "abstract": "A key/value pair data type",  
      "user_name": "David E. Wheeler",  
      "docpath": "doc/pair",  
      "date": "2013-10-25T21:54:00Z",  
      "excerpt": "A key/value <strong>pair</strong> data type",  
      "version": "0.1.1",  
      "dist": "pair"  
    },  
    {  
      "extension": "unnest_ordinality",  
      "score": "0.144",  
      "date": "2013-04-19T16:39:07Z",  
      "docpath": "doc/unnest_ordinality",  
      "excerpt": "turn an array into a set of (element_number, element) <strong>pairs</strong>.",  
      "version": "1.0.1",  
      "dist": "unnest_ordinality"  
    }  
  ]  
}
```

# API DOCS

[github.com/pgxn/pgxn-api/wiki](https://github.com/pgxn/pgxn-api/wiki)

**SITE**



# Site

pgxn.org

# Site

pgxn.org

## Thin layer over API

# Site

pgxn.org

**Thin layer over API**

**Just give it the URL**

# Site

pgxn.org

**Thin layer over API**

**Just give it the URL**

**Read-only**

# Site

pgxn.org

**Thin layer over API**

**Just give it the URL**

**Read-only**

**Mostly static**

# Site

pgxn.org

**Thin layer over API**

**Just give it the URL**

**Read-only**

**Mostly static**

**FAST!**

# Site

pgxn.org

**Thin layer over API**

**Just give it the URL**

**Read-only**

**Mostly static**

**FAST!**

```
> bin/pgxn_site_server \  
  --errors-to err@pgxn.org \  
  --errors-from www@pgxn.org \  
  --feedback-to pgxn@pgxn.org \  
  --api-url https://api.pgxn.org \  
  --base-url http://localhost
```

# Site

pgxn.org

**Thin layer over API**

**Just give it the URL**

**Read-only**

**Mostly static**

**FAST!**

```
> bin/pgxn_site_server \  
  --errors-to err@pgxn.org \  
  --errors-from www@pgxn.org \  
  --feedback-to pgxn@pgxn.org \  
  --api-url https://api.pgxn.org \  
  --base-url http://localhost
```



# Site

pgxn.org

**Thin layer over API**

**Just give it the URL**

**Read-only**

**Mostly static**

**FAST!**

```
> bin/pgxn_site_server \  
  --errors-to err@pgxn.org \  
  --errors-from www@pgxn.org \  
  --feedback-to pgxn@pgxn.org \  
  --api-url https://api.pgxn.org \  
  --base-url http://localhost
```

**DEMO**

# COMMAND LINE CLIENT

# CLI

[pgxn.github.io/pgxnclient](https://pgxn.github.io/pgxnclient)

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[pgxn.github.io/pgxnclient](https://pgxn.github.io/pgxnclient)

**By Daniele Varrazzo**

# CLI

[pgxn.github.io/pgxnclient](https://pgxn.github.io/pgxnclient)

**By Daniele Varrazzo**

**Python app**

# CLI

[pgxn.github.io/pgxnclient](https://pgxn.github.io/pgxnclient)

**By Daniele Varrazzo**

**Python app**

**Uses API**

# CLI

[pgxn.github.io/pgxnclient](https://pgxn.github.io/pgxnclient)

**By Daniele Varrazzo**

**Python app**

**Uses API**

**Git-like commands**

**install**

**uninstall**

**search**

**mirror**

**And more!**



# CLI

[pgxn.github.io/pgxnclient](https://pgxn.github.io/pgxnclient)

**By Daniele Varrazzo**

**Python app**

**Uses API**

**Git-like commands**

**install**

**uninstall**

**search**

**mirror**

**And more!**

**Extensible**

```
search --ext pair --verbose
```

# search --ext pair --verbose

> pgxn search --ext pair --verbose

# search --ext pair --verbose

```
> pgxn search --ext pair --verbose
```

```
DEBUG: opening url: https://api.pgxn.org/index.json
```

```
DEBUG: opening url: https://api.pgxn.org/search/extensions/?q=pair  
pair 0.1.7
```

A key/value *\*pair\** data type

```
unnest_ordinality 1.0.1
```

turn an array into a set of (element\_number, element) *\*pairs\**

pgxn install

# pgxn install

```
> pgxn install pair --pg_config /opt/bin/pg_config
```

# pgxn install

```
> pgxn install pair --pg_config /usr/local/opt/postgresql16/bin/pg_config
INFO: best version: pair 0.1.7
INFO: saving /tmp/tmpov1gen3m/pair-0.1.7.zip
INFO: unpacking: /tmp/tmpov1gen3m/pair-0.1.7.zip
INFO: building extension
cp sql/pair.sql sql/pair--0.1.2.sql
INFO: installing extension
/bin/gmkdir -p '/data/pgsql-16share/extension'
/bin/gmkdir -p '/data/pgsql-16share/extension'
/bin/gmkdir -p '/data/pgsql-16share/doc/extension'
/bin/ginstall -c -m 644 ./pair.control '/data/pgsql-16share/extension/'
/bin/ginstall -c -m 644 ./sql/pair--0.1.2.sql ./sql/pair--unpacked--0.1.2.sql '/data/pgsql-16share/extension/'
/bin/ginstall -c -m 644 ./doc/pair.md '/data/pgsql-16share/doc/extension/'
```

**GET /dist/pair.json**

# pgxn install

```
> pgxn install pair --pg_config /opt/bin/pg_config
```

```
INFO: best version: pair 0.1.7
```

```
INFO: saving /tmp/tmpov1gen3m/pair-0.1.7.zip
```

```
INFO: unpacking: /tmp/tmpov1gen3m/pair-0.1.7.zip
```

```
INFO: building extension
```

```
cp sql/pair.sql sql/pair--0.1.2.sql
```

```
INFO: installing extension
```

```
/bin/gmkdir -p '/data/pgsql-16share/extension'
```

```
/bin/gmkdir -p '/data/pgsql-16share/extension'
```

```
/bin/gmkdir -p '/data/pgsql-16share/doc/extension'
```

```
/bin/ginstall -c -m 644 ./pair.control '/data/pgsql-16share/extension/'
```

```
/bin/ginstall -c -m 644 ./sql/pair--0.1.2.sql ./sql/pair--unpacked--0.1.2.sql 'data/pgsql-16share/extension/'
```

```
data/pgsql-16share/extension/'
```

```
/bin/ginstall -c -m 644 ./doc/pair.md '/data/pgsql-16share/doc/extension/'
```

**GET /dist/pair/  
0.1.7/pair-0.1.7.zip**



# pgxn install

```
> pgxn install pair --pg_config /opt/bin/pg_config
```

```
INFO: best version: pair 0.1.7
```

```
INFO: saving /tmp/tmpov1gen3m/pair-0.1.7.zip
```

```
INFO: unpacking: /tmp/tmpo11122/pair-0.1.7
```

```
INFO: building extension
```

```
./configure && make install
```

```
cp sql/pair.sql sql/pair--0.1.2.sql
```

```
INFO: installing extension
```

```
/bin/gmkdir -p '/data/pgsql-16share/extension'
```

```
/bin/gmkdir -p '/data/pgsql-16share/extension'
```

```
/bin/gmkdir -p '/data/pgsql-16share/doc/extension'
```

```
/bin/ginstall -c -m 644 ./pair.control '/data/pgsql-16share/extension/'
```

```
/bin/ginstall -c -m 644 ./sql/pair--0.1.2.sql ./sql/pair--unpacked--0.1.2.sql
```

```
data/pgsql-16share/extension/'
```

```
/bin/ginstall -c -m 644 ./doc/pair.md '/data/pgsql-16share/doc/extension/'
```

pgxn load

# pgxn load

```
> pgxn load -d david -h localhost pair
```

# pgxn load

```
> pgxn load -d david -h localhost pair  
INFO: best version: pair 0.1.7  
CREATE EXTENSION
```

# pgxn load

```
> pgxn load -d david -h localhost pair
```

```
INFO: best version: pair 0.1.7
```

```
CREATE EXTENSION
```

```
> psql -d david -c "SELECT pair('foo', 'bar')"
```

```
pair
```

```
-----
```

```
(foo,bar)
```

```
(1 row)
```

# Utils

[github.com/guedes/pgxn-utils](https://github.com/guedes/pgxn-utils)

# Utils

[github.com/guedes/pgxn-utils](https://github.com/guedes/pgxn-utils)

## Development tools

# Utils

[github.com/guedes/pgxn-utils](https://github.com/guedes/pgxn-utils)

**Development tools**

**By Dickson Guedes**



# Utils

[github.com/guedes/pgxn-utils](https://github.com/guedes/pgxn-utils)

**Development tools**

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**Ruby app**

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**Development tools**

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**Ruby app**

**Uses Upload API**

**Extends pgxn CLI:**

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[github.com/guedes/pgxn-utils](https://github.com/guedes/pgxn-utils)

**Development tools**

**skeleton (init)**

**By Dickson Guedes**

**Ruby app**

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**release**

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[github.com/guedes/pgxn-utils](https://github.com/guedes/pgxn-utils)

**Development tools**

**By Dickson Guedes**

**Ruby app**

**Uses Upload API**

**Extends pgxn CLI:**

**skeleton (init)**

**change (metadata)**

**bundle**

**release**

**Needs Ruby 3 update**



pgxn-utils skeleton

# pgxn-utils skeleton

```
> pgxn skeleton --git --template=fdw fdw_pgxn
```

# pgxn-utils skeleton

```
> pgxn skeleton --git --template=fdw fdw_pgxn
create   fdw_pgxn
create   fdw_pgxn/fdw_pgxn.control
create   fdw_pgxn/.gitignore
create   fdw_pgxn/.template
create   fdw_pgxn/META.json
create   fdw_pgxn/Makefile
create   fdw_pgxn/README.md
create   fdw_pgxn/doc/fdw_pgxn.md
create   fdw_pgxn/sql/fdw_pgxn.sql
create   fdw_pgxn/sql/uninstall_fdw_pgxn.sql
create   fdw_pgxn/src/fdw_pgxn_fdw.c
create   fdw_pgxn/test/expected/base.out
create   fdw_pgxn/test/sql/base.sql
init     /dev/pgxn/fdw_pgxn
commit   initial commit
```

**Needed for PGXN**

# pgxn-utils skeleton

```
> pgxn skeleton --git --template=fdw fdw_pgxn
create   fdw_pgxn
create   fdw_pgxn/fdw_pgxn.control
create   fdw_pgxn/.gitignore
create   fdw_pgxn/.template
create   fdw_pgxn/META.json
create   fdw_pgxn/Makefile
create   fdw_pgxn/README.md
create   fdw_pgxn/doc/fdw_pgxn.md
create   fdw_pgxn/sql/fdw_pgxn.sql
create   fdw_pgxn/sql/uninstall_fdw_pgxn.sql
create   fdw_pgxn/src/fdw_pgxn_fdw.c
create   fdw_pgxn/test/expected/base.out
create   fdw_pgxn/test/sql/base.sql
init     /dev/pgxn/fdw_pgxn
commit   initial commit
```

**PG\_CONFIG Makefile**

# pgxn-utils skeleton

```
> pgxn skeleton --git --template=fdw fdw_pgxn
```

```
create fdw_pgxn
```

```
create fdw_pgxn/fdw_pgxn.control
```

```
create fdw_pgxn/.gitignore
```

```
create fdw_pgxn/.template
```

```
create fdw_pgxn/META.json
```

```
create fdw_pgxn/Makefile
```

```
create fdw_pgxn/README.md
```

```
create fdw_pgxn/doc/fdw_pgxn.md
```

```
create fdw_pgxn/sql/fdw_pgxn.sql
```

```
create fdw_pgxn/sql/uninstall_fdw_pgxn.sql
```

```
create fdw_pgxn/src/fdw_pgxn_fdw.c
```

```
create fdw_pgxn/test/expected/base.out
```

```
create fdw_pgxn/test/sql/base.sql
```

```
init /dev/pgxn/fdw_pgxn
```

```
commit initial commit
```



**PGXN**  
**recommended**  
**structure**

pgxn-utils change

# pgxn-utils change

```
> pgxn change fdw_pgxn --maintainer "David Wheeler" --license bsd
```

# pgxn-utills change

```
> pgxn change fdw_pgxn --maintainer "David Wheeler" --license bsd
  conflict  META.json
Overwrite /dev/pgxn/fdw_pgxn/META.json? (enter "h" for help) [Ynaqdh]
  "abstract": "A short description",
  "description": "A long description",
  "version": "0.0.1",
-  "maintainer": "The maintainer's name",
+  "maintainer": "David Wheeler",
-  "license": "postgresql",
+  "license": "bsd",
  "provides": {
    "fdw_pgxn": {
      "abstract": "A short description",
Retrying...
Overwrite /dev/pgxn/fdw_pgxn/META.json? (enter "h" for help) [Ynaqdh]
  force  META.json
  identical  fdw_pgxn.control
```

**META Modified**



pgxn-utils release

# pgxn-utils release

> pgxn bundle fdw\_pgxn

# pgxn-utils release

- › pgxn bundle fdw\_pgxn  
create /dev/pgxn/fdw\_pgxn-0.0.1.zip

# pgxn-utils release

- › pgxn bundle fdw\_pgxn  
create /dev/pgxn/fdw\_pgxn-0.0.1.zip
- › pgxn release fdw\_pgxn-0.0.1.zip

# pgxn-utils release

```
> pgxn bundle fdw_pgxn  
   create /dev/pgxn/fdw_pgxn-0.0.1.zip
```

```
> pgxn release fdw_pgxn-0.0.1.zip
```

```
Enter your PGXN username: theory
```

```
Enter your PGXN password: *****
```

```
Trying to release fdw_pgxn-0.0.1.zip ... released successfully!
```

```
Visit: https://manager.pgxn.org/distributions/fdw\_pgxn/0.0.1
```



# CI/CD TOOLS

The background features a stylized mountain range with various peaks and valleys. The mountains are rendered in different shades of purple and blue, creating a sense of depth and atmosphere. The overall color palette is cool and modern.

# CI/CD Tools

[github.com/pgxn/docker-pgxn-tools](https://github.com/pgxn/docker-pgxn-tools)

# CI/CD Tools

[github.com/pgxn/docker-pgxn-tools](https://github.com/pgxn/docker-pgxn-tools)

## Docker image



# CI/CD Tools

[github.com/pgxn/docker-pgxn-tools](https://github.com/pgxn/docker-pgxn-tools)

**Docker image**

**Run Postgres 8.2-17**

# CI/CD Tools

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# CI/CD Tools

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**Task Scripts**

# CI/CD Tools

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**pg-start**

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**pgxn CLI**

**pg\_prove**

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**pg-start**

**pg-build-test**

# CI/CD Tools

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**pgxn CLI**

**pg\_prove**

**Task Scripts**

**pg-start**

**pg-build-test**

**pgxn-bundle**



# CI/CD Tools

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**Docker image**

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**Utilities**

**pgxn CLI**

**pg\_prove**

**Task Scripts**

**pg-start**

**pg-build-test**

**pgxn-bundle**

**pgxn-release**

# CI WORKFLOW

# CI WORKFLOW

```
name: CI
on: [push, pull_request]
jobs:
  test:
    strategy:
      matrix:
        pg: [16, 15, 14, 13, 12, 11, 10, 9.6, 9.5, 9.4, 9.3, 9.2, 9.1, 9.0, 8.4, 8.3, 8.2]
    name: Test PostgreSQL ${{ matrix.pg }}
    runs-on: ubuntu-latest
    container: pgxn/pgxn-tools
    steps:
      - name: Start PostgreSQL ${{ matrix.pg }}
        run: pg-start ${{ matrix.pg }}
      - name: Check out the repo
        uses: actions/checkout@v4
      - name: Test on PostgreSQL ${{ matrix.pg }}
        run: pg-build-test
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```

**make all**

**make install**

**make installcheck**

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## Jobs

- ✓ 🐘 PostgreSQL 16
- ✓ 🐘 PostgreSQL 15
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- ✓ 🐘 PostgreSQL 8.4
- ✓ 🐘 PostgreSQL 8.3
- ✓ 🐘 PostgreSQL 8.2



# RELEASE WORKFLOW

# RELEASE WORKFLOW

```
name: 🚀 Release on PGXN
on:
  push:
    tags: ['v[0-9]+.[0-9]+.[0-9]+' ]
jobs:
  release:
    name: Release on PGXN
    runs-on: ubuntu-latest
    container: pgxn/pgxn-tools
    steps:
      - name: Check out the repo
        uses: actions/checkout@v4
      - name: Bundle the Release
        run: pgxn-bundle
      - name: Release on PGXN
    env:
      PGXN_USERNAME: ${ secrets.PGXN_USERNAME }
      PGXN_PASSWORD: ${ secrets.PGXN_PASSWORD }
    run: pgxn-release
```

# RELEASE WORKFLOW

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        run: pgxn-bundle
    name: Release on PGXN
    env:
      PGXN_USERNAME: ${ secrets.PGXN_USERNAME }
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    run: pgxn-release
```

**pgxn validate-meta**  
**git archive --format zip**

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```

```
curl -F archive=@zipfile \
https://manager.pgxn.org/upload
```

# RELEASE IT!



PGXN

@pgxn@botsin.space



Released: pgmq 1.1.1



A lightweight message queue like AWS SQS or RSMQ, but on Postgres



By tembo

[pgxn.org/dist/pgmq/](https://pgxn.org/dist/pgmq/)



PGXN: PostgreSQL Extension Network

**pgmq: A lightweight message queue like AWS SQS or ...**

A lightweight message queue for PostgreSQL, like AWS SQS or RSMQ, but ...

Jan 11, 2024 at 16:03 · 🌐 · PGXN Release Bot · ↻ 1 · ★ 2



**THANK YOU**

David E. Wheeler  
PGXN, Tembo

